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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,943	07/29/2003	Yuri Goldstein	PCTEL-020	9106

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EXAMINER

LEE, SIU M

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No. 10/628,943	Applicant(s) GOLDSTEIN ET AL.	
	Examiner Siu M. Lee	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 13, 41 and 42 is/are rejected.
- 7) ☒ Claim(s) 4-12, 14-40, 43-64 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/08/2003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Page 4, paragraph 0065, lines 11, replace equation (1) with:

$$(X_{di}, Y_{di}) \rightarrow \min [(X_i - X_{cn})^2 + (Y_i - Y_{cn})^2].$$

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Isaksen et al. (US 6,904,098 B1).

(1) Regarding claim 1:

Isaksen et al. discloses a method, comprising:

a) receiving a wireless telecommunications data signal without accompanying pilot signals (the method explain by figure 9 is using a blind equalization mode,

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therefore, no pilot is use in the wireless communication data signal, step 236, column 12, lines 23-28);

b) extracting information from the wireless telecommunications data signal (the averaged phase error signal obtain in step 244 in figure 9, column 12, lines 42-44); and

c) using said information (the averaged phase error signal obtain in step 244 in figure 9), demapping said wireless telecommunications data signal (after the QAM signal is compensate for the carrier phase angle error, it will be output to the DEMAP block, column 5, lines 19-21) by either modifying an indication of said wireless telecommunications data signal (using a complex multiplier to insert an inverse of the averaged phase error vector signal into the QAM blind equalized signal to compensate for the carrier phase error, step 246 in figure 9, column 12, lines 44-48) and comparing a modified indication to constellation point values to obtain a decision (when repeating the steps 238 to 246 as ordered by the step 254, the carrier phase error corrected QAM BE equalized signal will compare to the nearest plant point again in step 240 to come down to the decision in step 251 in figure 9, column 12, lines 48-52).

(2) Regarding claim 2:

Isaksen et al. discloses a method wherein said information extracted from the wireless telecommunications data signal is phase adjustment information (the averaged phase error signal obtain in step 244 use in compensation of the carrier phase error, column 12, lines 38-48).

(3) Regarding claim 3 and 13:

Isaksen et al. discloses a method wherein said extracting information comprises reducing and averaging differential quadrature components of the received signal (step 244 in figure 9 averaging the instantaneous phase error vector signal by using a carrier loop filter, by averaging the instantaneous phase error vector signal in the loop, it will reduce the instantaneous phase error vector until the test 251 in figure 9 is passed, column 12, lines 42-44).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peeters et al. (US 7,080,295 B2) in view of Djokovich et al. (US 6,952,458 B1).

(1) Regarding claim 41:

Peeters et al. discloses a receiver (receiver 130 in figure 1) which receives a wireless telecommunications data signal without accompanying pilot signals (the transmitter 110 in figure 1 is a wireless RF transmitter, therefore the receiver 130 receives wireless telecommunication data signal and the communication system in figure 1 does not use a pilot signals, column 3, lines 5-7 and lines 20-23), said receiver including a demapper (demapper 340 of the receiver 130 in figure 3, column 4, lines 39-41).

Peeters et al. fails to disclose said demapper including means for extracting information to demap said wireless telecommunications data signal by either modifying an indication of said telecommunications data signal and comparing a modified indication to constellation point values to obtain a decision.

However, Djokovich et al. discloses a demapper (demapper system 214 of the receiver modem 104 in figure 2B) including means for extracting information to demap said wireless telecommunications data signal by either modifying an indication of said telecommunications data signal (the demapper system determine the hard demapper output d according to a minimum Euclidean distance criterion so that d is at a minimum Euclidean distance from the received symbol r , column 9, lines 35-37, column 11, lines 50-52) and comparing a modified indication to constellation point values to obtain a decision (the hard demapper output d is compare to a challenger c_i , where c_i is anyone of the vector a, b, e, f, g, h, k, u in figure 3 which represent a 8QAM constellation, column 9, lines 44-.58, by finding the challenger c_i a reliability of the hard demapper output d (m_i) is calculated and then the soft bit is calculated based on the reliability m_i , column 1, lines 51-60, column 12, lines 12-15).

It is desirable to for the demapper to include means for extracting information to demap said wireless telecommunications data signal by either modifying an indication of said telecommunications data signal and comparing a modified indication to constellation point values to obtain a decision because it is less complicated, less time consuming and cheaper (column 10, lines 57-67). Therefore, it would have been

obvious to one of ordinary skill in the art at the time of invention to combine the teaching of Djokovich et al. in the system of Peeters et al. to improve the efficiency of the system.

(2) Regarding claim 42:

Peeters et al. discloses a telecommunications system (communication system 100 in figure 1, column 2, lines 46-47), comprising: a first telecommunications apparatus including a transmitter (transmitter 110 in figure 1, column 2, lines 48-49) which transmits a wireless telecommunications data signal without accompanying pilot signals (the transmitter 110 in figure 1 is a wireless RF transmitter, therefore the receiver 130 receives wireless telecommunication data signal and the communication system in figure 1 does not use a pilot signals, column 3, lines 5-7 and lines 20-23); and a second telecommunications apparatus including a receiver which receives said wireless telecommunications data signal (receiver 130 in figure 1, column 2, lines 52-55), said receiver including a demapper (demapper 340 of the receiver 130 in figure 3, column 4, lines 39-41).

Peeters et al. fails to discloses said demapper including means for extracting information to demap said wireless telecommunications data signal by either modifying an indication of said telecommunications data signal and comparing a modified indication to constellation point values to obtain a decision.

However, Djokovich et al. discloses a demapper (demapper system 214 of the receiver modem 104 in figure 2B) including means for extracting information to demap said wireless telecommunications data signal by either modifying an indication of said telecommunications data signal (the demapper system determine the hard demapper

output d according to a minimum Euclidean distance criterion so that d is at a minimum Euclidean distance from the received symbol r , column 9, lines 35-37, column 11, lines 50-52) and comparing a modified indication to constellation point values to obtain a decision (the hard demapper output d is compare to a challenger c_i , where c_i is anyone of the vector a, b, e, f, g, h, k, u in figure 3 which represent a 8QAM constellation, column 9, lines 44-.58, by finding the challenger c_i a reliability of the hard demapper output d (m_i) is calculated and then the soft bit is calculated based on the reliability m_i , column 1, lines 51-60, column 12, lines 12-15).

It is desirable to for the demapper to include means for extracting information to demap said wireless telecommunications data signal by either modifying an indication of said telecommunications data signal and comparing a modified indication to constellation point values to obtain a decision because it is less complicated, less time consuming and cheaper (column 10, lines 57-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the teaching of Djokovich et al. in the system of Peeters et al. to improve the efficiency of the system.

Allowable Subject Matter

6. Claims 4-12, 14-40, 43-64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hu et al. (US 5,914,988) discloses a digital packet data trellis decoder. Touzni et al. (US 7,031,405 B1) discloses carrier phase estimation based on single-axis constant modulus cost criterion and Bussgang criteria. Tosato et al. (US 2004/0091058 A1) discloses a QAM receiver and method for constellation having at least sixteen symbols.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Siu M. Lee whose telephone number is (571) 270-1083. The examiner can normally be reached on Mon-Fri, 7:30-4:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Siu M. Lee
1/7/2007


CHIEH M. FAN
SUPERVISORY PATENT EXAMINER